INSTRUCTIONS FOR CONVERTING AND REFILLING PRINTER PENS

OVERVIEW:

Pens for the Shsrp CE-150 printer (and the Radio Shack equivalent) can be made refillable by the following procedure:

Drill a tiny hole thru the plastic color grommet of each pen. With water & syringe flush out the original ink pigment. With alcohol & syringe flush out the water. With new ink & syringe flush out the alcohol and leave pen filled with new ink. Set aside filled syringes for future refilling of the pens.

The new inks are not compatible with each other or with the original inks. Mixing inks can cause a precipitate that can ruin the pens.

MATERIALS:

One set (or more) of pens. 4 colors per set.

Six 1 cc tuberculin syringes with 27 gauge 1/2 inch needle.
Source: Eckerds, Revco or other discount drugstores.
Cost: approx. 25¢ each.

4 bottles of ink (2 fl. oz. of each of 4 colors). Carter's stamp pad inker.
Source: stationery supply, office supply, discount marts.
Cost: approx. $1.70 each.

One 5/64 inch diameter drill bit.
Source: hardware, hobby shop, discount mart
Cost: approx. 75¢

Household items:
Rubbing alcohol (clear isopropyl): approx. 1/4 cup per 4 pens.

A small knife (pen knife, pocket knife, or kitchen knife)

Water, a half cup (distilled or demineralized) per 4 pens

Paper towels or absorbent napkins.

Dishwashing gloves or other means to protect hands from ink stains.

Electric drill (1/4 in. or smaller) or Dremel Moto-Tool:
If you don't have one, borrow from a friend. If you're not "handy" you should have someone who is drill the holes. It is very easy for a person experienced with electric drills.

DRILLING THE HOLES:

Safety glasses should be worn. Chuck up the 5/64 in. drill bit. At slow to medium speed drill a shallow dimple in each plastic grommet about midway between the pen point and the outer edge of the grommet. These dimples will guide the needle when drilling the holes.

Place a syringe on a cutting board. Place the knife edge on the stem between the base of the syringe and the plastic needle housing. Cut through the stem so that it remains firmly in the needle housing. Mount the stem and needle on the 5/64 in. drill bit. Hold the chuck and twist the needle housing until it is secure on the drill bit. Remove the protective cover from the needle. At slow speed see that the needle runs true (doesn't wobble). To straighten the needle, turn the drill "off", rotate the chuck and find to which side the needle leans. Place finger at base of needle and bend needle gently from leaning side to just past center. Release the needle, it should return to approx. center. You may have to do this several times until the needle runs true. With drill secure on firm base or stand and running at medium speed, gently drill a hole through each grommet using the dimple as a starter guide. The grommets are 1/8 in. thick. Take care not to bend the needle.

FLUSHING WITH WATER:

Take the pens, syringes, inks, distilled water, alcohol and paper towels to a sink basin. Be sure that the pens cannot be lost down the drain. Fill a syringe with water (distilled or demineralized). Insert the needle as far as possible through the grommet of the first pen to be flushed. Press the syringe plunger. Notice the ink pigment pouring out of the pen. Refill the syringe (you may pull the plunger out and pour water into the syringe barrel leaving the pen on the needle). Flush the pen about five times, remove pen from needle and draw approx. 10 lines 2-3 inches long by laying the pen point on the paper towel. Draw the lines slowly. Let the pigment spread out. The purpose is to pull the pigment out of the pen point. Flush the pen 5 more times and draw 10 more lines. Repeat this procedure with each pen.

FLUSHING WITH ALCOHOL:

Use the same procedure as flushing with water, but flush with alcohol only 4-5 times and draw the 10 lines on a paper towel. If you see see any ink pigment in the lines, flush with alcohol a few more times and draw a few more lines. Repeat this procedure with each pen.

FLUSHING WITH NEW INK:

Caution, some of these inks are nearly permanent and can produce stains. Pressing the plunger forcefully can cause the needle to pop-off the syringe. This can cause a splatter of ink and a mess to clean up. Also, sometimes the needle may get clogged, if you feel resistance against the plunger, do not force it. Pull the plunger outward to see if air enters through the needle. If not, then hold a lighted match or other flame under the tip of the needle while pressing gently on the plunger. When the tip of the needle clears, ink will spurt out and cool the needle. Remove flame quickly. Protect hands from ink stains.

Use a clean syringe for each pen according to color grommet. Open the first inker bottle. Rotate syringe while inserting needle through inker pad. Turn bottle on its side and draw ink into syringe. Do not squeeze ink bottle or ink will drip out. Fill syringe. Remove needle from ink bottle and insert in correct color pen. Slowly depress the plunger and empty the syringe through the pen. Remove the syringe and refill it. Wipe off the pen and draw 5-10 lines slowly on the paper towel. Again insert the needle into the pen and this time press the plunger only about half way. Then pull the plunger back slowly until air bubbles enter syringe through needle. This removes excess ink from pen. Remove the syringe, replace the protective needle cover and set aside for future use. Wipe off the pen & draw about 5 lines slowly on a paper towel. The pen is now ready for use with the printer. Repeat this procedure with the other color pens being careful to match pen color & ink color.

CLEANUP:

After removing the work materials any stains remaining should be soaked with alcohol on tissue paper for 10 minutes. Any remaining residue can usually be bleached with laundry bleach. Stains on clothing or fabric should be soaked in alcohol before the ink dries.

TIPS:

It is best to purge air from syringes and store them plunger end down.

Sometimes an overfilled pen will leak ink onto printer barrel. This can be cleaned up with a cotton swab dampened with alcohol.

When refilling pens, inject ink slowly until a drop of ink comes out of the pen. Then pull excess ink back into syringe until bubbles come through the needle (the needle should be inserted as far as possible into the pen). Hold pens in paper towel while refilling.

TIPS:

The red ink can be darkened by mixing one part green with 80-100 parts red. Do not mix any other colors.

The black and blue inks are waterproof.

The green & red inks are water resistant (red is the least resistant). If spills of water, beer, etc. occur on your printouts with red & green print, it should be blotted immediately.

If a pen has a gimpy point, try drawing a long series of ovals or connected circles. The ball point should deliver ink evenly when rolled in any direction.

If the pens have not been used for a week or more, the ink in the point may dry out. By printing 4 or 5 lines of characters, fresh ink will be brought to the point.